Applicant:
Warren and Swanson
Application No.: 09/389,537
Filed: September 2, 1999


## I. AMENDMENTS

### A. IN THE SPECIFICATION:

Please enter the following amended paragraph into the specification on page 3, in place of the paragraph beginning with "In accordance with another aspect of the present invention...", the second full paragraph:

C1 --In accordance with another aspect of the present invention there are provided isolated nucleic acid molecules encoding mature polypeptides expressed by the DNA encoding an enzyme of the present invention.--

Please enter the following amended paragraphs into the specification on page 5, in place of the paragraph beginning with "Figure 9":

C2 --Figure 9 shows the full-length DNA (SEQ ID NO.: 35) and corresponding deduced amino acid sequence (SEQ ID NO.: 36) of *Ammonifex degensii* histidinol phosphate aminotransferase.

Figure 10 shows the full-length DNA (SEQ ID NO.: 39) and corresponding deduced amino acid sequence (SEQ ID NO.: 40) of *Aquifex* aspartate aminotransferase.

Figure 11 is a diagram of the assay used to assess aminotransferase activity of the proteins using glutamate dehydrogenase.--

Please enter the following amended paragraph into the specification on page 6, in place of the paragraph beginning with "In accordance with an aspect of the present invention...", the fourth full paragraph:

C3 --In accordance with another aspect of the present invention, there are provided isolated polynucleotides encoding the enzymes of the present invention. The deposited material is a

C3 cont

mixture of genomic clones comprising DNA encoding an enzyme of the present invention. Each genomic clone comprising the respective DNA has been inserted into a pQE vector (Quiagen, Inc., Chatsworth, CA).

Please enter the following amended paragraph into the specification on page 22, in place of the paragraph beginning with "Transaminases are highly stereoselective...":

C4

Transaminases are highly stereoselective, and most use L-amino acids as substrates. Using the approach disclosed in commonly assigned issued U.S. Patent Number 5,939,250, filed on December 7, 1996 and entitled "Combinatorial Enzyme Development," the disclosure of which is incorporated herein by reference in its entirety, one can convert the transaminases of the invention to use D-amino acids as substrates. Such conversion makes possible a broader array of transaminase applications. For instance, D-valine can be used in the manufacture of synthetic pyrethroids. D-phenylglycine and its derivatives can be useful as components of β-lactam antibiotics. Further the thermostable transaminases have superior stability at higher temperatures and in organic solvents. Thus, they are better suited to utilize either L- and/or D-maino acids for production of optically pure chiral compounds used in pharmaceutical, agricultural, and other chemical manfactures.

Please enter the following amended paragraphs into the specification on page 27, in place of the paragraph beginning with "*Ammonifex degensii*":

C5

*Ammonifex degensii* hp aminotransferase

5'-CCGAGAATTCATTAAAGAGGAGAAATTAACTATGGCAGTCAAAGTGCGGCCT (SEQ ID NO: 33)

3'-CGGAGGATCCTTATCCAAAGCTTCCAGGAAG (SEQ ID NO: 34)

Homology information:

Closest to *Bacillus subtilis* (reference; Henner, D.J., Band., Flaggs G., Chen E.; Gene 49:147-152(1886). Percent similarity:65.084 Percent Identity 44.134